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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,740	02/20/2004	Yuji Hori	AOY0102PUSA	6589

22045 7590 09/20/2005

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EXAMINER	
LIN, ING HOUR	

ART UNIT	PAPER NUMBER
1725	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/783,740	HORI ET AL.	
	Examiner	Art Unit	
	Ing-Hour Lin	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-2, 6-8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of Berg et al.

JP '724 (see abstract) teaches the claimed water-soluble casting mold and method for manufacturing the mold including mixing refractory granular material with binder containing magnesium sulfate heptahydrate ($MgSO_4 .7 H_2O$) and packing the mixture in a mold and drying the mixture to produce the claimed mold. JP '724 fails to teach the use of retaining a portion of crystal water in the magnesium sulfate.

However, Berg et al (col. 2, lines 55) teach the use of retaining a portion of crystal water in the magnesium sulfate and magnesium chloride for the purpose of controlling crystal water (col. 3, lines 1+) retained in the magnesium sulfate and magnesium chloride over a wide high temperature range and enhancing high temperature resistance of the mold (consolidated building material). It would have been obvious to one having ordinary skill in the art to provide JP '724 the use of retaining a portion of crystal water in the magnesium sulfate and magnesium chloride as taught by Berg et al in order to effectively control crystal water retained in the magnesium sulfate and magnesium chloride over a wide high temperature range and enhancing high temperature resistance of the mold.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of Berg et al and further in view of Sadan.

JP '724 in view of Berg et al fails to teach the use of monohydrate crystal water for the sulfate in the mold.

However, Sadan (col. 6, lines 15+) teaches the use of monohydrate crystal water for the sulfate as water resistance is concerned because monohydrate sulfate can not only release but also absorb up to 100% of its weight in water without caking. It would have been obvious to one having ordinary skill in the art to provide JP '724 in view of Berg et al the use of monohydrate crystal water for the sulfate as taught by Sadan et al in order to effectively increasing the life time of the mold.

5. Claims 4-5 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of Berg et al and further in view of Seeney et al.

JP '724 in view of Berg et al fails to teach the use of improved binder including potassium dihydrogen phosphate and aluminum phosphate.

However, Seeney et al (col. 1, lines 33+) teach the use of improved binder including potassium dihydrogen phosphate and aluminum phosphate (a product of aluminum dihydrogen phosphate after heating and losing water) for the purpose of preventing air pollution (col. 1, lines 28+) when molten metal cast in the mold. It would have been obvious to one having ordinary skill in the art to provide JP '724 in view of Berg et al the use of improved binder including potassium dihydrogen phosphate and aluminum phosphate as taught by Seeney et al in order to prevent air pollution when molten metal cast in the mold.

6. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of Berg et al and further in view of JP 63132745.

JP '724 in view of Berg et al fails to teach the use of microwave heating.

However, JP '745 (see abstract) teaches the use of microwave for the purpose of selective heating and drying free water in the binder and to produce a mold having high strength and retaining a portion of crystal water. It would have been obvious to one having ordinary skill in the art to provide JP '724 in view of Berg et al the use of selective heating by microwave as taught by JP '745 in order to produce a mold having high strength and retaining a portion of crystal water.

7. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of Berg et al and further in view of Nishio et al.

JP '724 in view of Berg et al fails to teach the use of a ventilative ceramic mold.

However, Nishio et al (col. 2, lines 29+)) teach the use of a ventilative ceramic mold 7 for the purpose of exhausting air in the molding granular material to produce a mold having high strength. It would have been obvious to one having ordinary skill in the art to provide JP '724 in view of Berg et al the use of a ventilative ceramic mold as taught by Nishio et al in order to exhaust air in the molding granular material to produce a mold having high strength.

Response to Arguments

Applicant's arguments filed on 6/23/05 have been fully considered but they are not persuasive. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, applicant argued that JP '724 fails to teach the use of retaining a portion of crystal water in the magnesium sulfate.

However, Berg et al (col. 2, lines 55) teach the use of retaining a portion of crystal water in the magnesium sulfate and magnesium chloride for the purpose of controlling crystal water (col. 3, lines 1+) retained in the magnesium sulfate and magnesium chloride over a wide high

temperature range and enhancing high temperature resistance of the mold (consolidated building material) including dual binder system (see abstract). It would have been obvious to one having ordinary skill in the art to provide JP '724 the use of retaining a portion of crystal water in the magnesium sulfate and magnesium chloride as taught by Berg et al in order to effectively control crystal water retained in the magnesium sulfate and magnesium chloride over a wide high temperature range and enhancing high temperature resistance of the mold. Further, JP '724 in view of Berg et al fails to teach the use of monohydrate crystal water for the sulfate in the mold.

However, applicant argued that Sadan (col. 6, lines 15+) teaches the use of monohydrate crystal water for the sulfate as water resistance is concerned because monohydrate sulfate can not only release but also absorb up to 100% of its weight in water without caking. It would have been obvious to one having ordinary skill in the art to provide JP '724 in view of Berg et al the use of monohydrate crystal water for the sulfate as taught by Sadan et al in order to effectively increasing the life time of the mold.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

I.-H. Lin

9-16-05

KEVIN KERNS
PRIMARY EXAMINER

Kevin Kerns 9/19/05